

VALUE ENGINEERING CHANGE PROPOSAL  
MISSOURI DEPARTMENT OF TRANSPORTATION

☒ Conceptual Proposal      ☐ Final Proposal

Date 8/3/09

Contract ID 090522-616

Job No. J6I1541B

County St. Louis

Original Bid Cost \$6,631,734.51

Contractor Fred Weber, Inc.

By Charlie Hayes

Designed By Jacobs

Phone 314-316-6154

VECP# 09-70 (to be completed by C.O.)

VECP ☐ or PDVECP ☐

1. Description of existing requirements and proposed change(s). Advantages/Disadvantages

**Existing:** Existing twin bridges to be removed and replaced with steel girder structure. The replacement bridge is a two span structure on piling and drilled shaft foundations. There is one MSE wall to be constructed located at Bent 3.

**Proposed:** Re-design the structure to add an MSE wall at bent 1 and re-design the other at bent 3 to shorten the bridge, eliminating deck and structural steel. Also proposed is re-designing the substructure type from pre-boring piling on bents 1 and 3 and drilled shafts at bent 2 to spread footings on 1 and 3 and a pile footing on 2. The advantage of doing this will be a cost savings to MoDOT with an equivalent structure being provided as well as decreased impact on I-55 with construction of bent 2. The final design will address potential differential settlement and the existing box culvert. Right now the plan take a boring and run a consolidation test upon conceptual approval, and the box culvert will be analyzed. If it needs to be strengthened, we will remove the section affected and replace with a precast box culvert, which can be installed in coordination with either a piling or spread footing foundation.

2. Estimate of reduction in construction costs. \$330,000.00

3. Prediction of any effects the proposed change(s) will have on other department costs, such as maintenance and operations.

No known cost impact.

4. Anticipated date for submittal of detailed change(s) of items required by Section 104.6 of the Specifications.

8/3/09

(date)

5. Deadline for issuing a change order to obtain maximum cost reduction, noting the effect of contract completion time or delivery schedule.

8/10/09-Conceptual

(date)

Increased cost of structural steel girders due to mill increases

(effect)

6. Dates of any previous or concurrent submission of the same proposal.

7/23/09

(date and/or dates)

Additional Comments:

**\*\* Portion Below This Line To Be Filled Out by MoDOT \*\***

**Comments:**

The South Area Team has reviewed the Conceptual Proposal with MoDOT's Bridge Dept. The Team has approved this Value Engineering Conceptual Proposal only. MoDOT will still need to approve the redesign of any changes the contractor makes to the original design plans. MoDOT does have some concerns that the contractor must address during the redesign: 1) Geotechnical concerns with the soil and embankment 2) Redesigning of the bridge 3) Designing for a new box culvert and 4) The sight distance from the Union Rd Ramp onto Northbound I-55. When the contractor submits his redesign proposal, more concerns may come up during the review that may need to be addressed. If the redesign is not approved, the contractor should be responsible for absorbing the redesign cost that they have encountered.

*Scott Washburn*  
Submitted By Resident Engineer

8/25/09

Date

**Comments:**

THE PROJECT TEAM HAS MANY CONCERNS WITH THIS VE. THEY HAVE POINTED THEM OUT TO THE CONTRACTOR WHO BELIEVES HE CAN ADDRESS TO OUR SATISFACTION. KNOWING THAT THESE DISCUSSIONS HAVE TAKEN PLACE AND THE CONTRACTOR STILL WANTS TO MOVE FORWARD, ANY COSTS TO REDSIGN WILL BE THE CONTRACTOR'S RESPONSIBILITY IF THE REDSIGN IS NOT APPROVED.



Approval  
Recommended

8-31-09



Rejection  
Recommended

*Ed Sharp*  
District Engineer

Date

**Comments:** The VE proposal will need to address issues determined in the required geotechnical report. There have been many concerns expressed to the Contractor, who still wishes to proceed.

So that the Contractor may proceed to develop the VE proposal, we offer conditional approval with the stipulation that if the final VE proposal is not accepted, then the Contractor assumes all costs for developing the VE proposal and has no right to claims against MoDOT or FHWA.



Approval  
Recommended

*Ken Foster Jr*

9/17/09



Rejection  
Recommended

Federal Highway Administration  
Required for FHWA Full Oversight Projects

Date

**Comments:** This constitutes approval for the concept only and the contractor must satisfy all concerns stated herein, and any that are subsequently determined on the basis of the contractor's design, design features, and issue solutions which must be submitted if the contractor chooses to continue in pursuit of this VE.  
Denis Glascock 8/31/2009



Approval

*David D. Coates*

9-21-09



Rejection

State Construction and Materials Engineer

Date

Distribution: Resident Engineer, Project Manager, District Construction & Materials Engineer, State Construction & Materials Engineer, FHWA Value Engineering Administrator - MoDOT, P. O. Box 270, Jefferson City, MO 65102

## Conceptual Proposal Comments:

**Settlement:** We understand there is clay under the proposed MSE wall. The redesign will address this item by the following. Upon conceptual approval, we will have a boring take in the location of the proposed abutment/MSE wall. A consolidation test will be run based on that boring. This process can be done while finishing the superstructure design and will not impact the overall timeframe of the design. Once the results of this test are known we can design and construct accordingly. There are several options to mitigate the potential for differential settlement on the structure, and they can/will be addressed at the time of the final design. If for some reason we cannot make the footings work, the final design submittal and CO can be changed to reflect a deep pile foundation.

**Box Culvert:** I apologize the verbiage about the box culvert did not make it on the first submittal. We are aware of the potential loading issue and have cost projected to address this issue in the VE. After conceptual approval the existing culvert will be analyzed to determine loading and whether it will accommodate the extra fill and abutment loads. In the current proposal I have cost to remove and replace the existing box culvert section under the MSE wall. The final design will determine the appropriate remedy if there is one.

**MSE Wall:** We are aware of the issue with the electrochemical requirements of the backfill on the MSE Wall, and the wall will be designed in order to accommodate a fill material that will meet the requirements set forth by FHWA and MoDOT.

**Sight Distance:** We are aware of the requirement and will address the exception that was already attained for the planned structure.

**Future Expansion:** We are unaware of any plans for future expansion of I-55 in this area. We have no way of factoring this in to the decision to approve or deny based on this.

The value engineering amount has been lowered from original design to accommodate for the requirement for boring and consolidation testing required in order to substantiate the spread footing design based on the comments we have received. This decrease is minimal in comparison to the decrease of a going with a pile design on the abutments when compared to the overall savings.

Based on the comments we received and the subsequent rejection of the VE proposal we feel that with further design and testing as mentioned above we can provide adequate solutions to all the concerns put forth in the comments. Again this is only a conceptual approval to proceed down the design path as laid out. Should we reach a point where we are convinced we cannot build the abutments without a pile foundation, we can easily switch gears without affecting the overall structure, and minimal reduction in savings (cost of adding piling back in) to the overall VE.

# VALUE ENGINEERING CHECK SHEET

## TYPE OF WORK

(Check one that applies)

- ☒ Bridge/Structure/Footings
- ☐ Drainage Structures (RCP, RCB, CMP's, ect.)
- ☐ TCP/MOT
- ☐ Paving (PCCP, ect.)
- ☐ Grading/MSE Walls
- ☐ Signal/Lighting/ITS
- ☐ Misc. - Base eliminated

## SUMMARY OF PROPOSAL

(If needed, condense summary to a couple of lines)

This VE involves changing the footings/pilings, addition of an MSE structure, and shorting the bridge.

## SCANNING OF DOCUMENT

If the proposal is large, please mark or make note, which pages need to be scanned into the database. If there are special instructions, make note of them here.